AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

Listing of Claims:

1. (Currently Amended) A system for rehabilitation of a hearing disorder, comprising:

at least one acoustic ~~sensor,~~ sensor configured to sense an acoustic signal and ~~configured~~ to convert said acoustic signal into an electrical audio ~~signal,~~ signal;

an electronic signal processing unit configured to ~~process and~~ amplify said electrical audio signal, said signal processing unit ~~including,~~ comprising:

a speech analysis and recognition module configured ~~wherein said speech analysis and recognition module is arranged~~ to detect and extract additional prosody of ~~the~~ speech information from said audio signal, and

a speech synthesis module configured to facilitate ~~the~~ transmission of said speech information in a noisy ~~environment;~~ environment, based on ~~wherein said speech synthesis module is arranged to take into account~~ the prosody of said speech information ~~in speech synthesis,~~; and

an actuator arrangement, configured to provide output stimulation and configured to be positioned ~~for positioning~~ in a single external auditory ~~passage;~~ passage, ~~said actuator arrangement~~ comprising at least dual output stimulators consisting of, ~~wherein said output stimulators are~~ at least one intracochlear electromechanical or purely electric stimulator, and at least an additional extracochlear electroacoustic, electromechanical, or purely electric stimulator.

2. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said signal processing unit comprises:

a digital signal processor having software modules for implementing said speech analysis and recognition module and said speech synthesis module.

3. (Currently Amended) The system of claim 2, ~~wherein the~~ wherein said speech analysis and ~~speech~~ recognition module ~~and the~~ and said speech synthesis module are adaptive.

4. (Currently Amended) The system of claim 2, ~~wherein the~~ wherein said speech analysis and ~~speech~~ recognition module ~~and the~~ and said speech synthesis module are re-programmable.

5. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said speech analysis and ~~speech~~ recognition module ~~and the~~ and said speech synthesis module ~~include~~ each comprise a digitally implemented neural network.

6. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said speech analysis and ~~speech~~ recognition module ~~and the~~ and said speech synthesis module are adapted to transmit phonetic categories between said modules.

7. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said speech analysis and ~~speech~~ recognition module ~~and the~~ and said speech synthesis module are adapted to transmit lexical categories between said modules.

8. (Cancelled).

9. (Currently Amended) The system of claim 1, wherein

said speech analysis and recognition module is ~~arrangement is~~ configured to detect and extract ~~prosody of speech information is adapted for extraction of~~ level and characteristic of fundamental speech frequency for voiced sounds, and wherein

said speech synthesis module is ~~the arrangement~~ configured to take into account prosody of speech information in speech synthesis and is adapted to effect the corresponding modulation of ~~the output signal.~~ a generated output signal.

10. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said speech analysis and recognition module ~~and the~~ and said speech synthesis module are adapted to be turned off to enable processing of audio signals without speech analysis and synthesis.

11. (Currently Amended) The system of claim 10, further configured to automatically turn ~~off the~~ off said speech analysis and recognition module ~~and the~~ and said speech synthesis module at a low level of interfering sound.

12. (Currently Amended) The system of claim 10, further configured to turn ~~off the~~ off said speech analysis and recognition module ~~and the~~ and said speech synthesis module by remote control.

13. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said signal processing unit further includes software modules adapted to enable masking of tinnitus parallel to operation of speech synthesis. ~~the hearing aid~~.

14. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said signal processing unit ~~includes,~~ further comprises:

a preprocessing arrangement for at least one of pre-amplification and filtering, and

an A/D converter for analog-digital (A/D) conversion ~~of the~~ of said acoustic signals.

15. (Currently Amended) The system of claim 14, ~~wherein the~~ wherein said preprocessing arrangement comprises an anti-aliasing filter.

16. (Currently Amended) The system of claim 1 further comprising a plurality of acoustic sensors, ~~wherein,~~ wherein said acoustic sensors are configured to be upstream of an analog-digital converter.

17. (Currently Amended) The system of claim 1, wherein at least one digital-analog converter is connected upstream ~~of the~~ of said actuator arrangement.

18. (Currently Amended) The system of claim 1, ~~wherein the~~ wherein said actuator arrangement comprises a plurality of actuators, and wherein a respective digital-analog converter is connected upstream of each actuator.

19. (Previously Presented) The system of claim 17, wherein said signal processing unit further comprises:

a digital signal processor configured to process A/D-converted acoustic sensor signals, wherein said signals have been preprocessed by means of said preprocessing arrangement and configured to generate digital signals for tinnitus masking.

20. (Previously Presented) The system of claim 14, wherein said signal processing unit further comprises:

a digital signal processor configured to process A/D-converted acoustic sensor signals, wherein said signals have been preprocessed by means of said preprocessing arrangement and configured to generate digital signals for tinnitus masking.

21 – 76. (Cancelled)

77. (New) A system for rehabilitation of a hearing disorder, comprising:

at least one acoustic sensor configured to convert a sensed acoustical signal into an electrical audio signal;

a signal processing unit configured to analyze said audio signal and to synthesize said audio signal to generate an artificial speech signal having approximately no input-side interference; and

an actuator arrangement, configured to provide output stimulation based on said artificial speech signal, comprising at least dual output stimulators, consisting of at least one intracochlear electromechanical or purely electric stimulator, and said at least an additional extracochlear electroacoustic, electromechanical, or purely electric stimulator.

78. (New) The system of claim 77, wherein said signal processing unit is further configured to extract prosody of speech information from said audio signal, and wherein said artificial speech signal conveys said prosody information.

79. (New) The system of claim 77, wherein said signal processing unit is further configured to analyze said audio signal by performing speech segmentation or recognition.

80. (New) The system of claim 77, wherein said signal processing unit comprises:

software modules configured to analyze said audio signal and to convert said audio signal into said artificial speech signal.

81. (New) The system of claim 80, wherein said software modules are reprogrammable.

82. (New) The system of claim 77, wherein said signal processing unit is further configured to convert said audio signal into a purely artificial speech signal.

83. (New) The system of claim 77, wherein said signal processing unit includes a digitally implemented neural network configured to assign said audio signal to phonetic or lexical categories with automatic algorithms prior to synthesis.

84. (New) The system of claim 77, wherein said signal processing unit is further configured to transmit said audio signals to said actuator arrangement without performing said speech analysis and synthesis, and wherein said actuator arrangement is configured to provide output stimulation based on said transmitted audio signals.

85. (New) The system of claim 77, wherein said signal processing unit is further configured to perform tinnitus masking simultaneously with said speech analysis and synthesis.

86. (New) A system for rehabilitation of a hearing disorder, comprising:

at least one acoustic sensor configured to convert a sensed acoustical signal into an electrical audio signal;

a signal processor configured to process and amplify said electrical audio signal, including:

a speech analysis and recognition module having a digitally implemented neural network configured to analyze said audio signal with automatic algorithms;

a speech synthesis module configured to convert said analyzed audio signals into an artificial speech signal; and

an actuator arrangement configured to provide output stimulation based on said artificial speech signal.

87. (New) The system of claim 86, wherein said speech analysis and recognition module is configured to extract prosody of speech information from said audio signal, and said speech synthesis module is configured to produce an artificial speech signal that conveys said prosody information.

88. (New) The system of claim 86, wherein said speech analysis and recognition module is further configured to analyze said audio signal by performing speech segmentation or recognition.

89. (New) The system of claim 86, wherein said speech analysis and recognition module and said speech synthesis module comprise software modules.

90. (New) The system of claim 89, wherein said software modules are reprogrammable.

91. (New) The system of claim 86, wherein said speech synthesis module is configured to convert said analyzed audio signal into a purely artificial speech signal.

92. (New) The system of claim 86, wherein said speech analysis and recognition module is configured to assign said audio signal to phonetic or lexical categories prior to synthesis.

93. (New) The system of claim 86, wherein said signal processing unit is configured to turn off said speech analysis and recognition and speech synthesis modules, and to transmit said audio signals to said actuator arrangement without performing said speech analysis and synthesis, and wherein said actuator arrangement is configured to provide output stimulation based on said transmitted audio signals.

94. (New) The system of claim 86, wherein said signal processing unit is further configured to perform tinnitus masking simultaneously with said speech analysis and synthesis.

95. (New) The system of claim 86, wherein said actuator arrangement comprises:

at least dual output stimulators, wherein at least one stimulator is an intracochlear electromechanical or purely electric stimulator, and said at least additional stimulator is an extracochlear electroacoustic, electromechanical, or purely electric stimulator.